AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Previously Presented) A method, comprising:

providing a link receiver having a free buffer pool having empty receiver buffers,

providing at the link receiver a plurality of data credits corresponding to the free buffer pool;

transmitting the plurality of data credits to a link transmitter;

at the link transmitter selecting a logical channel from a plurality of logical channels and assigning at least one of the plurality of data credits to the logical channel;

transmitting a packet from the link transmitter to the link receiver on an ingress link;

diminishing the plurality of data credits as the packet is transmitted;

storing the packet in a plurality of receiver buffers at the link receiver;

transmitting the packet out of the plurality of receiver buffers at the link receiver on an egress link;

placing the plurality of receiver buffers into the free buffer pool as the packet is transmitting out of the plurality of receiver buffers, wherein the plurality of receiver buffers correspond to additional data credits; and

transmitting a flow control packet from a link receiver to the link transmitter, wherein the flow control packet comprises the additional data credits.

2. (Original) The method of claim 1, wherein the ingress link has an ingress link speed, and the egress link has an egress link speed, wherein placing the plurality of receiver buffers into the free buffer pool comprises:

if the egress link speed is less than the ingress link speed, placing the plurality of receiver buffers in the free buffer pool after a portion of the packet has been transmitted out of the plurality of receiver buffers, and wherein the portion of the packet is proportional to a ratio of the egress link speed to the ingress link speed; and

if the egress link speed is one of greater than and equal to the ingress link speed, placing the plurality of receiver buffers into the free buffer pool when the packet begins transmitting out of the plurality of receiver buffers.

3. (Original) The method of claim 2, wherein the packet begins transmitting out of the plurality of receiver buffers when one of the plurality of receiver buffers is empty.

4. (Previously Presented) The method of claim 2, wherein the portion of the packet is equal to one minus the ratio of the egress link speed to the ingress link speed.

5. (Previously Presented) The method of claim 1, further comprising selecting from the plurality of logical channels to allocate the additional data credits at the link transmitter.

6. (Canceled).

7. (Original) The method of claim 1, wherein the link transmitter and the link receiver operate in a switch fabric network.

8. (Original) The method of claim 7, wherein the switch fabric network is one of an Infiniband network and a Serial RapidIO network.

9. (Previously Presented) A method, comprising:

at the link transmitter selecting a logical channel from a plurality of logical channels and assigning a data credit to the logical channel;

transmitting a packet from the link transmitter to a link receiver on an ingress link;

removing a data credit at the link transmitter as the packet is transmitted;

storing the packet in a plurality of receiver buffers at the link receiver;

transmitting the packet out of the plurality of receiver buffers at the link receiver on an egress link; and

placing the plurality of receiver buffers into a free buffer pool when the packet begins transmitting out of the plurality of receiver buffers, wherein the plurality of receiver buffers correspond to additional data credits.

10. (Original) The method of claim 9, wherein the packet begins transmitting out of the plurality of receiver buffers when one of the plurality of receiver buffers is empty.

11. (Previously Presented) The method of claim 9, further comprising selecting from the plurality of logical channels to allocate the additional data credits at the link transmitter.

12. (Canceled).

13. (Previously Presented) A method, comprising:

at the link transmitter selecting a logical channel from a plurality of logical channels and assigning a data credit to the logical channel;

transmitting a packet from the link transmitter to a link receiver on an ingress link;

removing a data credit at the link transmitter as the packet is transmitted;

storing the packet in a plurality of receiver buffers at the link receiver;

transmitting the packet out of the plurality of receiver buffers at the link receiver on an egress link; and

placing the plurality of receiver buffers in a free buffer pool after a portion of the packet has been transmitted out of the plurality of receiver buffers, wherein the portion of the packet is proportional to a ratio of an egress link speed to an ingress link speed, and wherein the plurality of receiver buffers correspond to additional data credits.

14. (Previously Presented) The method of claim 13, wherein the portion of the packet is equal to one minus the ratio of the egress link speed to the ingress link speed.

15. (Previously Presented) The method of claim 13, further comprising selecting from the plurality of logical channels to allocate the additional data credits at the link transmitter.

16. (Canceled).

17. (Previously Presented) A switch, comprising:

a plurality of receiver buffers coupled to receive a packet from a link transmitter, the link transmitter operable to select a logical channel from a plurality of logical channels and assign a data credit to the logical channel, wherein the packet is stored in the plurality of receiver buffers, and wherein the switch transmits the packet out of the plurality of receiver buffers;

a free buffer pool; and

a link receiver flow control algorithm, wherein the link receiver flow control algorithm places the plurality of receiver buffers into the free buffer pool as the packet is transmitting out of the plurality of receiver buffers.

18. (Original) The switch of claim 17, wherein the switch is coupled to receive the packet on an ingress link having an ingress link speed, and wherein the switch is coupled to transmit the packet on an egress link having an egress link speed, wherein placing the plurality of receiver buffers into the free buffer pool comprises:

if the egress link speed is less than the ingress link speed, the plurality of receiver buffers are placed in the free buffer pool after a portion of the packet has been

transmitted out of the plurality of receiver buffers, and wherein the portion of the packet is proportional to a ratio of the egress link speed to the ingress link speed; and

if the egress link speed is one of greater than and equal to the ingress link speed, the plurality of receiver buffers are placed into the free buffer pool when the packet begins transmitting out of the plurality of receiver buffers.

19. (Original) The switch of claim 18, wherein the packet begins transmitting out of the plurality of receiver buffers when one of the plurality of receiver buffers is empty.

20. (Original) The switch of claim 18, wherein the portion of the packet is equal to one minus the ratio of the egress link speed to the ingress link speed.

21. (Original) The switch of claim 17, wherein the switch operates in a switch fabric network.

22. (Original) The switch of claim 21, wherein the switch fabric network is one of an Infiniband network and a Serial RapidIO network.

23. (Previously Presented) A computer-readable medium encoded with computer executable instructions for instructing a processor to perform a method of early buffer return, the instructions comprising:

at the link transmitter selecting a logical channel from a plurality of logical channels and assigning a data credit to the logical channel;

transmitting a packet from the link transmitter to a link receiver on an ingress link;

removing a data credit at the link transmitter as the packet is transmitted;

storing the packet in a plurality of receiver buffers at the link receiver;

transmitting the packet out of the plurality of receiver buffers at the link receiver on an egress link; and

placing the plurality of receiver buffers into a free buffer pool when the packet begins transmitting out of the plurality of receiver buffers, wherein the plurality of receiver buffers correspond to additional data credits.

24. (Original) The computer-readable medium of claim 23, wherein the packet begins transmitting out of the plurality of receiver buffers when one of the plurality of receiver buffers is empty.

25. (Previously Presented) The computer-readable medium of claim 23, further comprising selecting from the plurality of logical channels to allocate the additional data credits at the link transmitter.

26. (Canceled).

27. (Previously Presented) A computer-readable medium encoded with computer executable instructions for instructing a processor to perform a method of early buffer return, the instructions comprising:

at the link transmitter selecting a logical channel from a plurality of logical channels and assigning a data credit to the logical channel;

transmitting a packet from the link transmitter to a link receiver on an ingress link;

removing a data credit at the link transmitter as the packet is transmitted;

storing the packet in a plurality of receiver buffers at the link receiver;

transmitting the packet out of the plurality of receiver buffers at the link receiver on an egress link; and

placing the plurality of receiver buffers in a free buffer pool after a portion of the packet has been transmitted out of the plurality of receiver buffers, wherein the portion of the packet is proportional to a ratio of an egress link speed to an ingress link speed, and wherein the plurality of receiver buffers correspond to additional data credits.

28. (Previously Presented) The computer-readable medium of claim 27, wherein the portion of the packet is equal to one minus the ratio of the egress link speed to the ingress link speed.

29. (Previously Presented) The computer-readable medium of claim 27, further comprising selecting from the plurality of logical channels to allocate the additional data credits at the link transmitter.

30. (Canceled).

31. (Currently Amended) The method of claim 1, wherein said selecting a logical channel and assigning at least one of a plurality of data credits further comprises:

selecting the logical channel from the plurality of logical channels based on traffic conditions of the plurality of logical channels.